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United States Department of Agriculture

Soil Conservation Service

Montana Agricultural Experiment Station

Bozeman, Montana

MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow Forecasts as of May 15, 1984

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
Federal Bldg., Rm. 443
10 East Babcock
Bozeman, MT 59715

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The Montana Water Supply Outlook is a publication of the U.S. Soil Conservation Service. The SCS administers the Cooperative Snow Survey Program in cooperation with other federal, state and private agencies, organizations, and individuals.

The report is prepared by SCS, Snow Survey and Water Supply Forecast Staff, Room 443, Federal Building, 10 East Babcock, Bozeman, Montana.

FEDERAL - STATE - PRIVATE
COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"

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Snowmelt increases with warmer temperatures!

Snow surveys and SNOTEL reports indicate the water content in most snowpacks continued to increase almost to mid-May. Melt would occur for a few days and then additonal snowfall would increase the snowpacks. Low elevation snow in southwest Montana and near Red Lodge, left from the large storm near the end of April, persisted for the first week or two in May.

Near mid-month, warm temperatures throughout the higher elevations of southern Montana caused large snowmelt rates. In southwestern Montana, rainfall accompanied this large snowmelt and produced considerable runoff. Preliminary reports indicate the Ruby River produced peak flows nearly twice as large as any previously measured above Ruby Reservoir.

Most areas in the state received good moisture for the first half of May. The southern part of the state continues to have near to above average snowpacks while those remaining in the northern part are below average.

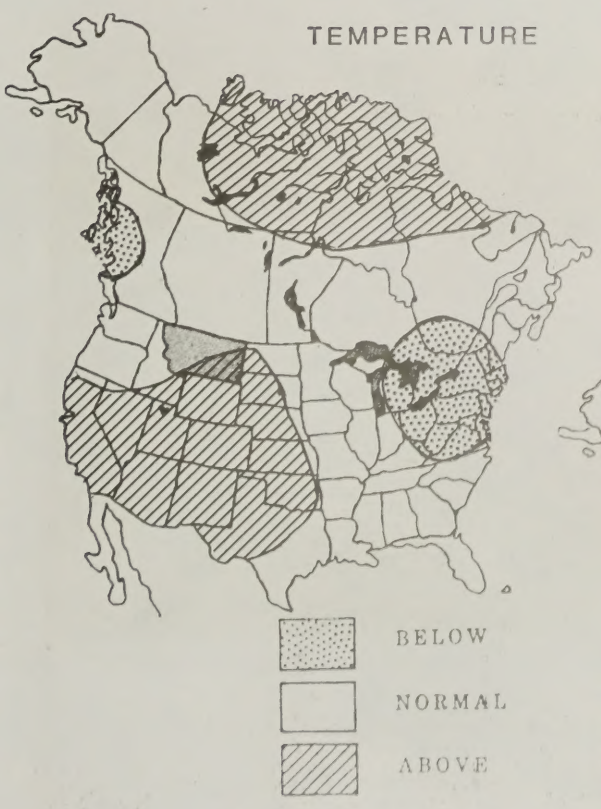
Based on present snowpack, the peak snowmelt runoff is expected to come in late may to mid-June on most major streams.

In the Missouri River drainage, the Big Hole River is expected to reach its snowmelt peak runoff in early June. The Madison River inflow to Hebgen Lake is expected to peak near the end of May or in early June. The Gallatin River is still forecast to have peak snowmelt runoff around mid-June. Inflow to Canyon Ferry Reservoir should peak the first or second week in June. Even though the Ruby River has had a major peak of record, it is expected that another secondary snowmelt peak will occur in early June.

Peak snowmelt runoff in the Yellowstone River drainage should occur around mid-June on most streams.

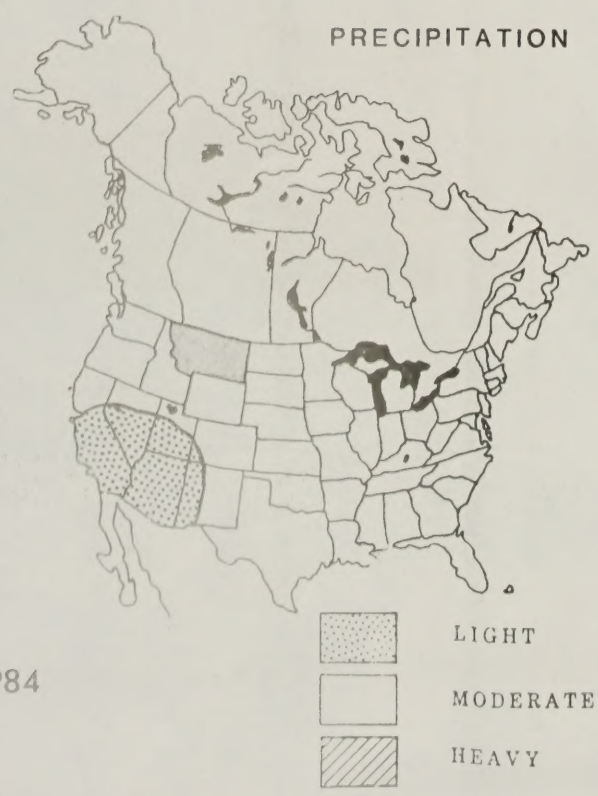
West of the Divide, most streams in the Clark Fork and Flathead drainages are expected to reach their snowmelt peaks in late May. The Bitterroot River could peak in late May or early June.

TEMPERATURE



average monthly weather outlook

PRECIPITATION



FOR MID-MAY TO MID-JUNE 1984

AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES
- Canada
  - Department of the Environment
    - Atmospheric Environment Service
    - Water Management Service
  - British Columbia Ministry of Environment
    - Inventory and Engineering Branch, Hydrology Section
  - Alberta Environment
    - Technical Services Division
- Federal
  - Department of the Army - Corps of Engineers
  - Department of Agriculture - Forest Service
  - Soil Conservation Service
  - Department of Commerce - National Environmental Satellite Service
  - National Weather Service
  - Department of Interior - Bureau of Indian Affairs
  - Fish and Wildlife Service
  - Geological Survey
  - National Park Service
  - Bureau of Reclamation
  - Department of Energy - Bonneville Power Administration

STATE AGENCIES
- Montana Conservation Districts
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry

PRIVATE ORGANIZATIONS
- The Anaconda Company
- Big Sky of Montana
- Butte Water Company
- Flathead Valley Community College
- Montana Power Company
- Pondera County Canal & Reservoir Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

SNOW SURVEY DATA

SNOW May 15, 1984

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (Inches)	THIS YEAR Water Content (Inches)	PAST RECORD Water Content (inches) Last Year	PAST RECORD Water Content (inches) Average
BADGER PASS	6900	5/17	65	28.4A	32.2	43.5
BADGER PASS PILLOW	6900	5/15	SP	23.4	30.8	35.3
BANFIELD MOUNTAIN	5600	5/14	17	6.3	20.2	15.1
BANFIELD MOUNTAIN PILLOW	5600	5/15	SP	7.2	17.9	12.3
BAREE CREEK	5500	5/14	65	30.2	40.5	39.9
BAREE MIDWAY	4600	5/14	33	14.5	24.2	22.9
BAREE TRAIL	3800	5/14	0	.0	.0	0.0
BARKER LAKES PILLOW	8250	5/15	SP	16.4	19.9	16.2
BASIN CREEK PILLOW	7180	5/15	SP	11.2	12.6	8.4
BEAGLE SPRINGS PILLOW	8850	5/15	SP	10.8	9.5	7.4
BEAVER LAKE	5900	5/17	30	11.9		23.0
BLACK BEAR PILLOW	7950	5/15	SP	36.0	39.4	35.3
BLACK PINE PILLOW	7100	5/15	SP	9.4	10.4	11.5
BLOODY DICK PILLOW	7550	5/15	SP	8.2		6.0
BLUE LAKE	5900	5/17	26	12.0A	18.7	21.6
BOTS SOTS	7750	5/14	36	14.7	11.8	7.6
BOULDER MOUNTAIN PILLOW	7950	5/15	SP	23.4	23.9	19.9
BOX CANYON PILLOW	6700	5/15	SP	.0	1.9	2.1
BRIDGER BOWL	7250	5/15	68	30.0	29.6	29.5
BRIDGER BOWL PILLOW	7250	5/15	SP	29.5	28.3	27.2
CALVERT CREEK PILLOW	6430	5/15	SP	.0	.0	0.1
CAMP SENIA	7890	5/14	45	17.6	11.6	9.7
CARROT BASIN PILLOW	9000	5/15	SP	27.8	28.9	32.9
CASHE CREEK PILLOW	7800	5/15	SP	9.1	10.2	7.5
CLOVER MEADOW PILLOW	8800	5/15	SP	23.7	15.0	17.6
COLE CREEK	7850	5/15	68	26.7	28.0	24.4
COLE CREEK PILLOW	7850	5/15	SP	26.1	26.8	19.0
COMBINATION PILLOW	5600	5/15	SP	.0	.1	0.7
COPPER BOTTOM PILLOW	5200	5/15	SP	.0	1.3	1.7
COPPER CAMP PILLOW	6950	5/15	SP	19.7	24.7	30.0
COPPER MOUNTAIN	7700	5/14	27	8.9	11.8	9.0
CRYSTAL LAKE PILLOW	6050	5/15	SP	12.4	6.7	7.9
DALY CREEK PILLOW	5780	5/15	SP	.0	1.6	3.7
DARKHORSE LAKE PILLOW	8700	5/15	SP	28.3	23.6	30.7
DEADMAN CREEK PILLOW	6450	5/15	SP	.5	.6	3.2
DISCOVERY BASIN	7050	5/14	31	11.2	10.0	7.5
DIVIDE PILLOW	7800	5/15	SP	13.0	11.7	8.1
DUPUYER CREEK PILLOW	5750	5/15	SP	.6	-	-
EAST BOULDER S	9250	5/15	90	30.0A	31.0	33.5
EMERY CREEK PILLOW	4350	5/15	SP	.7	6.2	1.4
FISHER CREEK PILLOW	9100	5/15	SP	30.7	34.1	39.6
FLATTOP MOUNTAIN PILLOW	6300	5/15	SP	34.6	42.1	49.6
FOURTH OF JULY	3450	5/16	0	.0	.0	0.0
FRIDAY HILL	4620	5/16	0	.0	8.6	4.1
FROHNER MEADOWS PILLOW	6480	5/15	SP	6.0	8.0	5.4
GARVER CREEK	4250	5/14	0	.0	.0	0.3
GARVER CREEK PILLOW	4250	5/15	SP	.0	.6	2.7
GIBBONS PASS	7100	5/16	49	22.0	22.6	19.9
GRAVE CREEK	4300	5/14	0	.0	9.4	7.8
GRAVE CREEK PILLOW	4300	5/15	SP	.0	7.4	2.1
GUNSIGHT LAKE	6300	5/17	68	30.6	33.6	41.1

SNOW May 15, 1984

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (Inches)	THIS YEAR Water Content (Inches)	PAST RECORD Water Content (inches) Last Year	PAST RECORD Water Content (inches) Average
HAND CREEK PILLOW	5030	5/15	SP	3.4	6.3	3.5
HAWKINS LAKE	6450	5/14	60	22.7	34.5	30.4
HAWKINS LAKE PILLOW	6450	5/15	SP	21.8	31.9	30.9
HELL ROARING DIVIDE	5770	5/16	55	23.1	27.4	24.9
HOODOO BASIN	6050	5/15	92	42.0	44.9	50.1
HOODOO BASIN PILLOW	6050	5/15	SP	36.5	39.3	41.9
HOODOO CREEK	5900	5/15	85	38.6	41.6	46.0
INTERGAARD	6450	5/14	17	5.7	4.8	6.2
KINGS HILL	7500	5/15	32	12.0	10.6	15.2
KRAFT CREEK PILLOW	4750	5/15	SP	.0	.5	2.2
LAKEVIEW RIDGE PILLOW	7400	5/15	SP	5.3	17.0	4.4
LEMHI RIDGE PILLOW	8100	5/15	SP	11.9	6.1	8.2
LICK CREEK	6860	5/14	32	12.8	8.7	6.2
LICK CREEK PILLOW	6860	5/15	SP	8.3	7.2	4.6
LOWER TWIN PILLOW	7900	5/15	SP	26.7	27.5	22.9
LUBRECHT FLUME PILLOW	4680	5/15	SP	.0	.0	0.0
MANY GLACIER PILLOW	4900	5/15	SP	.0	.0	1.8
MAYNARD CREEK	6210	5/15	32	12.2	14.0	12.4
MAYNARD CREEK PILLOW	6210	5/15	SP	13.1		12.0
MONUMENT PEAK PILLOW	8850	5/15	SP	19.6	22.0	30.2
MOULTON RESERVOIR	6850	5/15	0	.0	4.1	2.1
MOUNT LOCKHART PILLOW	6400	5/15	SP	13.5	18.7	21.5
MULE CREEK PILLOW	8350	5/15	SP	15.1	17.2	17.0
NEVADA CREEK PILLOW	6480	5/15	SP	5.7	15.6	10.2
NEWTON MOUNTAIN	5600	5/16	62	25.0	37.8	26.9
NEZ PERCE CAMP PILLOW	5650	5/15	SP	8.1	6.5	5.1
NOISY BASIN PILLOW	6040	5/15	SP	55.6	50.1	40.4
NORTH FK. ELK CREEK PILLOW	6250	5/15	SP	4.6	6.4	4.8
NORTHEAST ENTRANCE PILLOW	7350	5/15	SP	.8	3.7	1.5
PICKET PIN D	9450	5/15	93	30.5A	30.0	30.3
PICKFOOT CREEK PILLOW	6650	5/15	SP	.0	2.6	4.7
PIKE CREEK PILLOW	5930	5/15	SP	14.8		20.9
PLACER BASIN F	8830	5/15	78	24.0A	23.5	23.9
PLACER BASIN PILLOW	8830	5/15	SP	21.2	21.6	21.5
POORMAN CREEK	5100	5/14	44	18.6	25.7	22.6
POORMAN CREEK PILLOW	5100	5/15	SP	17.3	20.3	23.3
PORCUPINE PILLOW	6500	5/15	SP	1.6	1.9	0.4
RED MOUNTAIN	6000	5/15	30	10.6	15.9	15.0
RED TOP	5260	5/16	41	16.2	31.0	19.3
ROCKER PEAK PILLOW	8000	5/15	SP	12.7	18.4	18.6
SADDLE MOUNTAIN PILLOW	7900	5/15	SP	20.2	22.9	26.8
SHOWER FALLS PILLOW	8100	5/15	SP	34.7	29.1	29.0
SILVER RUN	6630	5/14	16	5.3	.0	2.2
SILVER RUN PILLOW	6630	5/15	SP	.4	.0	0.0
SKALKAHO SUMMIT PILLOW	7250	5/15	SP	19.8	23.3	25.8
SKYLARK TRAIL PILLOW	6200	5/15	SP	25.9	25.1	29.7
SOUTH FORK SHIELDS PILLOW	8100	5/15	SP	25.1		19.1
SPOTTED BEAR MOUNTAIN	7000	5/17	0	0.0A	4.0	6.4
SPUR PARK PILLOW	8100	5/15	SP	21.8	21.3	23.0
STAHL PEAK	6030	5/14	83	36.0	46.9	40.6
STAHL PEAK PILLOW	6030	5/15	SP	33.1	40.2	37.2
STAR LAKE E	9650	5/14	99	39.5A	45.5	52.0
TEPEE CREEK PILLOW	8000	5/15	SP	14.8	15.9	11.5
TIMBERLINE CREEK	8850	5/14	67	22.2	23.2	18.7
TRINKUS LAKE	6100	5/17	85	39.8	38.6	40.0
TWELVEMILE CREEK PILLOW	5600	5/15	SP	3.4	.0	6.4
TWIN CREEKS	3580	5/17	0	0.0A	0.0	0.2
TWIN LAKES PILLOW	6400	5/15	SP	34.3	32.2	38.7
WALDRON PILLOW	5600	5/15	SP	.0	4.2	3.2

SNOW May 15, 1984

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WARM SPRINGS PILLOW	7800	5/15	SP	24.8	24.9	27.5
WEASEL DIVIDE	5450	5/14	52	21.2	32.8	30.8
WHISKEY CREEK PILLOW	6800	5/15	SP	10.4	13.6	9.7
WHITE MILL PILLOW	8700	5/15	SP	23.0	25.1	25.1
WILLOW CREEK	6500	5/15	14	5.4	.0	2.7
WOOD CREEK PILLOW	5960	5/15	SP	.0	5.5	7.0
WYOMING						
BALD MOUNTAIN PILLOW (WY)	9380	5/15	SP	21.9		-
BEARTOOTH LAKE PILLOW (WY)	9270	5/15	SP	17.9		-
BURGESS R.S. PILLOW (WY)	7880	5/15	SP	18.6		-
CANYON PILLOW (WY)	7940	5/15	SP	5.8		-
PARKERS PEAK PILLOW (WY)	9400	5/15	SP	21.8		-
SYLVAN LAKE PILLOW (WY)	8420	5/15	SP	19.4		-
TROUT CREEK PILLOW (WY)	8400	5/15	SP	8.5		-
WOLVERINE PILLOW (WY)	7650	5/15	SP	3.5		-
BRITISH COLUMBIA						
FERNIE (BC)	3510	5/14	0	.0		0.2
FERNIE EAST (BC)	4100	5/14	0	.0		3.0
FERNIE NE (BC)	3510	5/14	0	.0A		0.0
FIDELITY MOUNTAIN (BC)	6130	5/14	105	45.5		53.1
GLACIER (BC)	4100	5/13	43	19.8		21.8
KICKING HORSE (BC)	5410	5/14	22	8.3		9.2
MARBLE CANYON (BC)	4990	5/13	17	6.4		7.7
MORRISSEY RIDGE (BC)	6100	5/14	45	19.1		22.2
MOUNT ABBOT (BC)	6490	5/14	115	49.3		55.9
SINCLAIR PASS (BC)	4490	5/15	0	.0		-
SULLIVAN MINE (BC)	5080	5/14	3	.3		6.2
LATE ARRIVING DATA						
Dix Hill	6400	5/16	0	0.0	-	-
North Fork Jocko	6330	5/18	79	37.4	35.5	42.8
Stuart Mountain	7400	5/18	72	32.8	33.6	30.0
TV Mountain	6800	5/18	42	17.9	17.6	17.9
Upper Holland Lake	6200	5/18	62	26.9	25.4	32.7

SP - Snow Pillow observations; water content only.
A - Aerial observation; water content estimated.
EST - Estimated water content.

Soil and Water Conservation 50

Many streams in Montana are experiencing high flows due to rain and melting snow.

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